

PCT US01 04281

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
9 August 2001 (09.08.2001)

PCT

(10) International Publication Number  
WO 01/57459 A1

(51) International Patent Classification<sup>7</sup>: F28C 1/00,  
F02M 23/14

(21) International Application Number: PCT/US01/04081

(22) International Filing Date: 7 February 2001 (07.02.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/180,819 7 February 2000 (07.02.2000) US  
60/265,548 31 January 2001 (31.01.2001) US

(71) Applicants and

(72) Inventors: MAISOTSENKO, Valeriy [US/US]; 5628 South Idalia Street, Aurora, CO 80015 (US). GILLAN, Leland, E. [US/US]; 3124 West 62nd Avenue, Denver, CO 80221 (US). HEATON, Timothy, L. [US/US]; 10875 West 77th Avenue, Arvada, CO 80005 (US). GILLAN, Alan, D. [US/US]; 3556 West 62nd Avenue, Denver, CO 80221 (US).

(74) Agent: SMITH, J., Mark; Pittenger & Smith, P.C., 3010 East 6th Avenue, Denver, CO 80206 (US).

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GI, GM, IR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

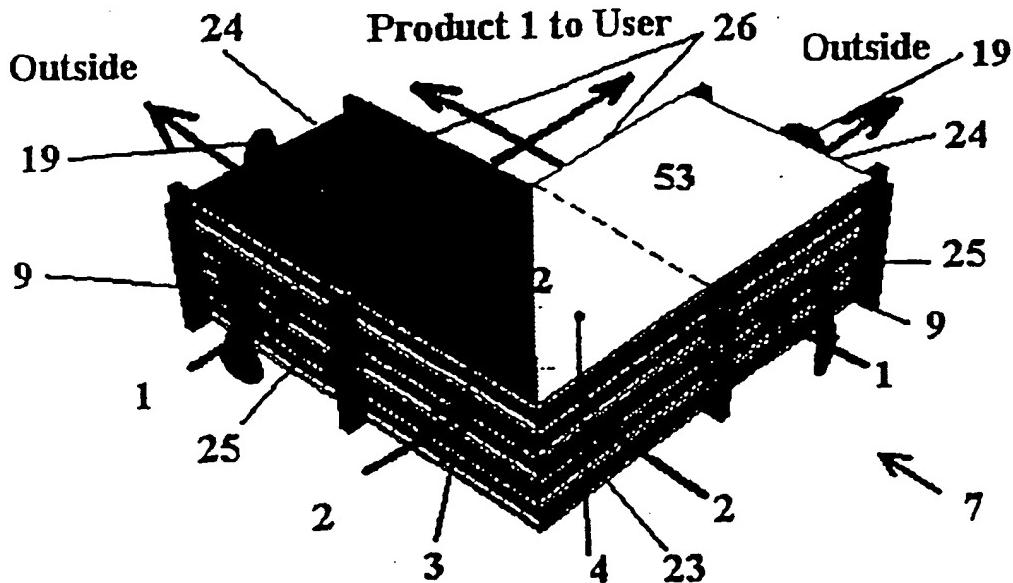
(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BJ, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- of inventorship (Rule 4.17(iv)) for US only

[Continued on next page]

(54) Title: METHOD AND APPARATUS FOR DEW POINT EVAPORATIVE PRODUCT COOLING



WO 01/57459 A1

(57) Abstract: The present invention relates to a method and an apparatus for providing enhanced indirect evaporative cooling of air, water, fuel, or other fluids while controlling the humidity. The design makes cooling down to the dew point possible without energy input other than the energy to produce the fluid flow needed. The design makes use of stacked composite plates (7) with channels (1, 2) for fluid flow between adjacent plates. On opposing surface areas of these plates, there are wet areas (4) or dry areas (3). The wet areas (4) provide cooling by conventional evaporation which is in turn used to cool the fluids in contact with the dry areas (3). The benefit is controlled heat transfer, which allows selected cooling of fluid flow such that the temperature as low as dew point are reachable.